Nama : Ririn Purwo Jati
NIM : J2C005140

SINTESIS *POROUS CARBON* BERBAHAN DASAR MOLASE DENGAN PENAMBAHAN KATION NON LOGAM

ABSTRAK

Telah dilakukan penelitian untuk mensintesis porous carbon dari molase dengan kation non logam. Variasi waktu karbonasi dan jenis asam dilakukan untuk mendapatkan produk sintesis yang paling optimum. Variasi massa molase yang digunakan adalah 15; 17,5; dan 20 g, sedangkan variasi jenis asam yaitu, asam sulfat, asam fosfat, dan asam klorida. Campuran dipanaskan 100º C selama 6 jam selanjutnya dicuci hingga pH netral sebelum pemanasan 160º C selama 3 jam. Karbonasi dilakukan pada 900º C selama 2, 4, dan 6 jam. Produk sintesis dianalisis menggunakan SEM dan BET. Hasil penelitian menunjukkan *porous carbon* berbentuk sperik dengan ukuran pori 1,3 nm serta waktu karbonasi yang optimum adalah 4 jam. Penggunaan asam sulfat menghasilkan morfologi relatif seragam dibanding asam yang lain karena memiliki ukuran partikel 0,2 hingga 1,5 µm dengan ukuran rata-rata 1,1 µm. Pada asam fosfat diperoleh massa produk relatif paling banyak yaitu 1,703 g, sedangkan dengan asam klorida dihasilkan *porous carbon* dengan ukuran pori paling kecil (1,3077 nm) dengan luas permukaan spesifik (379,851 m^2/g) serta volume pori yang besar (0,169 cc/g).

Kata kunci: *porous carbon*, molase, kation non logam, dan karbonasi

SYNTHESIS OF POROUS CARBONS FROM MOLASSES BY ADDING NONMETALLIC CATION

ABSTRACT

It has been a research to synthesize porous carbons from molasses added with nonmetallic cation. Variation of carbonization times and acid types determined to result the optimum product. Variation molasses mass were 15; 17,5; and 20 g, while variation of acid used were sulfuric acid, phosphoric acid, and hydrochloric acid. The mixture was heated at 100° C for 6 hours then washed to be neutral before heating at 160° C for 3 hours. Carbonization was done at 900° C about 2, 4, and 6 hours. Product of synthesis was analysed using SEM and BET. Result showed, the porous carbons had spheric shape and uniform of pore sizes about 1,3 nm and the optimum time of carbonization was 4 hours. Using sulfuric acid was more uniform morphology than the others which had particle size about 0,2 to 1,5 µm and had average particle size 1,1 µm. The result from phosphoric acid yielede more amount of mass porous carbons about 1,703 g, nevertheles using hydrochloric acid had the smallest pore sizes (1,3077 nm) with specific surface area (379,851 m^2/g) and pore volume size (0,169 cc/g) larger than others.

Key words: porous carbons, molasses, nonmetallic cation, and carbonization